

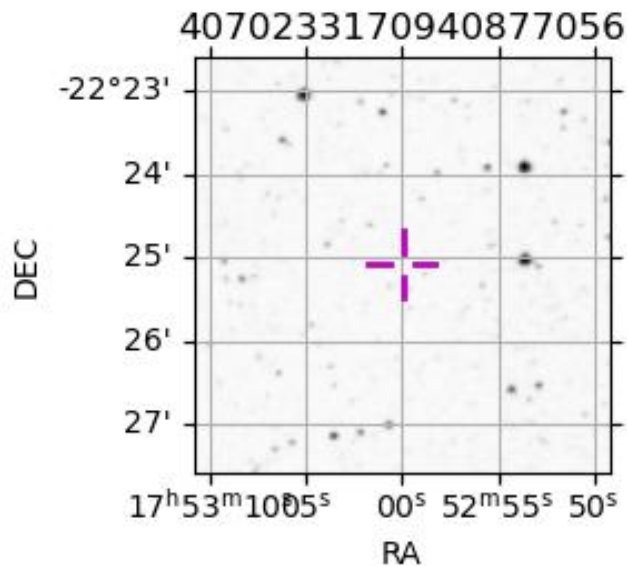
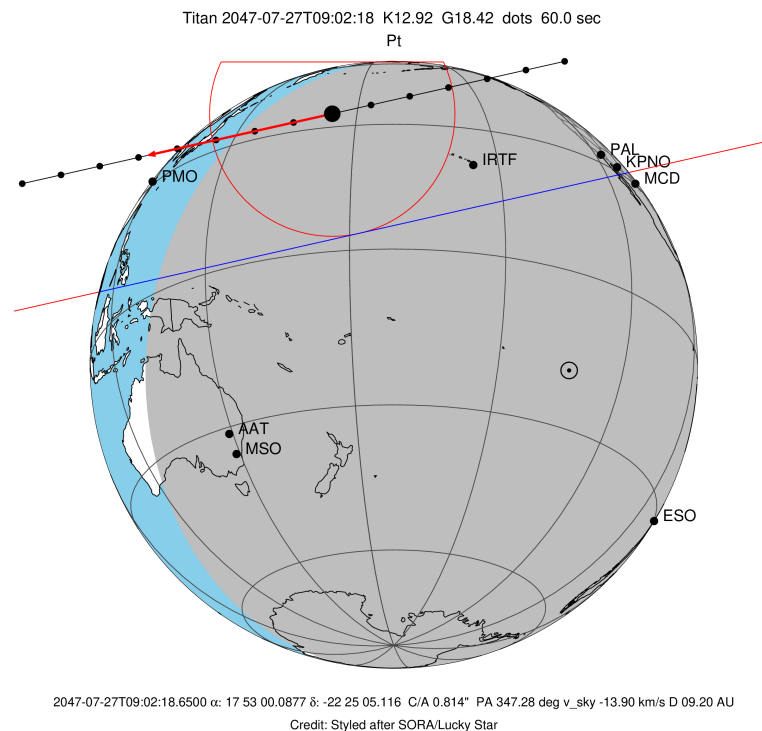
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2047-07-27T09:02:18.650
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4070233170940877056
 2Mass ID (if available) : 17530013-2225048

ICRS Star Coord at Epoch: 17h 53m 00.08772s -22:25:05.11595s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 12.922
 G magnitude : 18.415
 RP magnitude : 16.363
 BP magnitude : 19.405
 DUPflag : 0
 Distance (au) : 9.202
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -13.90
 Sun-Target sep (deg) : 144.73
 Sun-Moon sep (deg) : 88.47
 B (ring opening deg) : 26.65
 PA of pole (deg) : 5.53
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.810
 C/A sky separation (km) : 5406.6
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	JUL 27 08:54 - JUL 27 08:57	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUL 27 08:54 - JUL 27 08:56	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JUL 27 08:57 - JUL 27 09:01	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



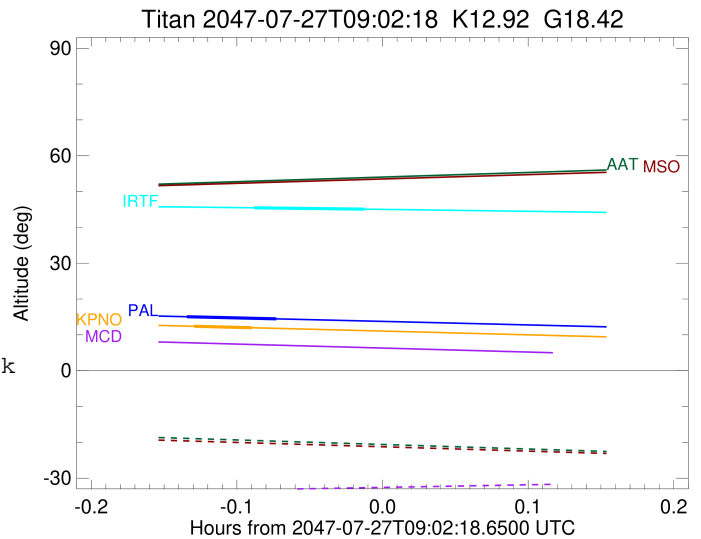
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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-07-27T08:56:05.400
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 4070233170940877056
2Mass ID (if available) : 17530013-2225048
ICRS Star Coord at Epoch: 17h 53m 00.08772s -22:25:05.11595s
RUWE (>1.4 is poor) : 0.00
K magnitude           : 12.922
G magnitude           : 18.415
RP magnitude          : 16.363
BP magnitude          : 19.405
DUPflag              : 0
Distance (au)         : 9.202
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.90
Sun-Target sep (deg)  : 144.73
Sun-Moon sep (deg)    : 88.72
B (ring opening deg) : 26.65
PA of pole (deg)      : 5.53
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.305
C/A sky separation (km) : 2038.9
NAIF SPICE kernels    : RAJobs_U111+rgf16.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk

```

x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-07-27T08:54:13.770	15.06	-35.70	2575.1	-57.08	-57.09
Titan	E	2047-07-27T08:57:57.049	14.46	-35.46	2575.2	-30.65	-30.67



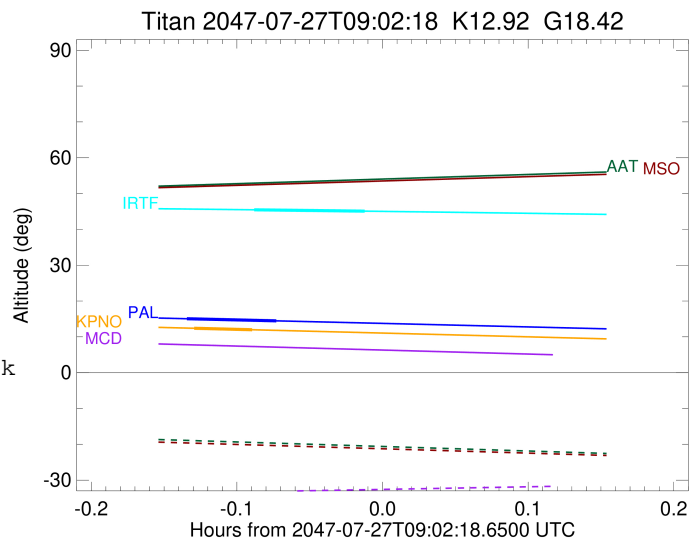
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-07-27T08:55:45.200
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : KPNO
Location              : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)   : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 4070233170940877056
2Mass ID (if available) : 17530013-2225048
ICRS Star Coord at Epoch: 17h 53m 00.08772s -22:25:05.11595s
RUWE (>1.4 is poor) : 0.00
K magnitude           : 12.922
G magnitude           : 18.415
RP magnitude          : 16.363
BP magnitude          : 19.405
DUPflag              : 0
Distance (au)        : 9.202
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.90
Sun-Target sep (deg) : 144.73
Sun-Moon sep (deg)   : 88.68
B (ring opening deg) : 26.65
PA of pole (deg)     : 5.53
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.354
C/A sky separation (km) : 2364.7
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk

```

x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-07-27T08:54:32.724	12.39	-35.41	2575.0	-62.78	-62.79
Titan	E	2047-07-27T08:56:57.692	11.98	-35.20	2575.1	-42.52	-42.53



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-07-27T08:59:17.760
Event type          : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 4070233170940877056
2Mass ID (if available) : 17530013-2225048
ICRS Star Coord at Epoch: 17h 53m 00.08772s -22:25:05.11595s
RUWE (>1.4 is poor) : 0.00
K magnitude          : 12.922
G magnitude          : 18.415
RP magnitude         : 16.363
BP magnitude         : 19.405
DUPflag             : 0
Distance (au)        : 9.202
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.90
Sun-Target sep (deg) : 144.73
Sun-Moon sep (deg)  : 89.17
B (ring opening deg) : 26.65
PA of pole (deg)    : 5.53
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.251
C/A sky separation (km) : 1675.6
NAIF SPICE kernels  : RAJobs_U111+rgf16.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk

```

x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-07-27T08:57:00.968	45.46	-45.13	2575.1	-49.49	-49.51
Titan	E	2047-07-27T09:01:34.540	45.08	-45.68	2575.1	-20.35	-20.36

